

REMARKS-General

The newly drafted independent claim 20 incorporates all structural limitations of the original claim 1 and includes further limitations previously brought forth in the disclosure. No new matter has been included. All new claims 20-32 are submitted to be of sufficient clarity and detail to enable a person of average skill in the art to make and use the instant invention, so as to be pursuant to 35 USC 112.

With regard to the rejection of record based on prior art, Applicant will advance arguments to illustrate the manner in which the invention defined by the newly introduced claims is patentably distinguishable from the prior art of record. Reconsideration of the present application is requested.

Response to Rejection of Claims 6 and 17-19 under 35USC112

The applicant submits that the newly drafted claims 20-32 particularly point out and distinctly claim the subject matter of the instant invention, as pursuant to 35USC112.

Regarding to the Rejection of Claims 1, 2, 5-7 and 10 under 35USC102

The examiner rejects claims 1, 2, 5-7 and 10 as being anticipated by Gorbell et al. (US 5,486,430). Pursuant to 35 U.S.C. 102, "a person shall be entitled to a patent unless:

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States.

In view of 35 U.S.C. 102(b), it is apparent that a person shall not be entitled to a patent when his or her invention was patent in this country more than one year prior to the date of the application for patent in the United States.

However, the Gorbell et al. patent and the instant invention are not the same invention according to the fact that the disclosure of Gorbell et al. patent does not read upon the instant invention and the newly drafted independent claim 20 of the instant invention does not read upon the Gorbell et al. patent either. Apparently, the instant

invention, which discloses an integral multi-stack system of fuel cell, should not be the same invention as the Gorbell et al. patent which discloses an internal fluid manifold assembly for an electromechanical fuel cell stack array.

The applicant respectfully clarifies the differences between the instant invention and Gorbell et al. for the purpose of overcoming the rejections under 35USC102 (b) as follows:

(A) Regarding the newly drafted independent claim 20, Gorbell et al. fails to anticipate an integral multi-stack system of a fuel cell comprising a plurality of fuel cell stacks and a manifolding functional frame, which comprises a non-porous body which is provided between the fuel cell stacks for **transversely and spacedly** mounting the fuel cell stacks at **two sides** of the non-porous body, and comprises a main fuel supply passage defining a **main fuel inlet** at a **first side** of the non-porous body, a main oxidant supply passage defining a **main oxidant inlet** at the **first side** of the non-porous body, a main coolant supply passage defining a **main coolant inlet** at the **first side** of the non-porous body, a main fuel discharging passage defining a **main fuel outlet** at a **second side** of the non-porous body which is opposed to the first side, a main oxidant discharging passage defining a **main oxidant outlet** at the **second side** of the non-porous body, and a main coolant discharging passage defining a **main coolant outlet** at the **second side** of the non-porous body, wherein the non-porous body further comprises a **fuel supply sub-passage** communicating the fuel supply passage with each of the fuel inlet ports, an **oxidant supply sub-passage** communicating the main oxidant supply passage with each of the oxidant inlet ports, a **coolant supply sub-passage** communicating the main coolant supply passage with each of the coolant inlet ports, a fuel discharging sub-passage communicating the main fuel discharging passage with each of the fuel outlet ports, an oxidant discharging sub-passage communicating the main oxidant discharging passage with each of the oxidant outlet ports, and a coolant discharging sub-passage communicating the main coolant discharging passage with each of the coolant outlet ports, wherein a supply and a discharge of the fuel, oxidant and coolant are spacedly provided on two ends of the non-porous body respectively, so that for each of the fuel cell stacks, a material flow of the fuel, the oxidant and the coolant between the fuel inlet port and the fuel outlet port, the oxidant inlet port and the oxidant outlet port, and the coolant inlet port and the coolant outlet port respectively are **independent from the other fuel cell stacks** so as to

simplify a flow network within the fuel cell and to minimize a flow impedance and energy loss thereof.

(B) Gorbell et al. discloses an array of electrochemical fuel cell stacks in which it is clear that the inlet fuel conduit (132), outlet fuel conduit (134), inlet oxidant conduit (136), outlet oxidant conduit (138), inlet coolant conduit (140) and outlet coolant conduit (142) are formed on **one side** of the fuel cell stack (102) so that the flow of fluid within the fuel cell stacks would be very complicated. The fluid flow network with the fuel cell stacks is in series.

(C) Gorbell et al. fails to anticipate that the fluid manifold assembly is provided between the fuel cell stacks for transversely and spacedly mounting the fuel cell stacks at two sides of the fluid manifold assembly. In contrast, the non-porous body is provided between the fuel cell stacks for transversely and spacedly mounting the fuel cell stacks at two sides of the non-porous body, so that the fluid flow pattern within the integral multi-stack system of fuel cell is arranged in a parallel manner.

(D) Regarding the newly drafted claim 21, Gorbell et al. fails to anticipate that the integral multi-stack system of fuel cell further comprises an attaching means for firmly attaching the fuel cell stack to the body of the manifold functional frame, wherein when each the fuel cell stack is securely attached to the body of the manifold functional frame, the fuel inlet, the oxidant inlet, the coolant inlet, the fuel outlet, the oxidant outlet, and the coolant outlet of the fuel cell stack are capable of air-communicating with the fuel supply sub-passage, the oxidant supply sub-passage, the coolant supply sub-passage, the fuel discharging sub-passage, the oxidant discharging sub-passage, and the coolant discharging sub-passage of the manifold functional frame so as to make the main passages and the sub-passages to be used to selectively supply and discharge gas and liquid used by the fuel cell stacks integrated, in addition to what is claimed in the newly drafted independent claim 20 as a whole.

(E) Regarding the newly drafted claim 22 and 25, Gorbell et al. fails to anticipate that the attaching means comprises a pair of end plates being pulled towards each other by a plurality of long insulate bolts passing through a plurality of corresponding screw holes formed in the manifold functional frame so as to sandwich the pair of fuel cell stacks therebetween, in addition to what is claimed in the newly

drafted independent claim 20 as a whole. It is worth mentioning that when a user wishes to replace any one of the fuel cell stacks in Gorbett et al., the user must disassemble the entire fuel cell stacks whereas when a user wishes to replace any one of the fuel cell stacks recited in claim 22, he or she merely needs to disassemble the relevant fuel cell stacks from the non-porous body. There is no need to disassemble all fuel cell stacks.

(F) Regarding the newly drafted claim 23, Gorbett et al. fails to anticipate that said integral multi-stack system of fuel cell further has a sealing plate for fluid tightly connecting each of the fuel cell stacks to the manifolding functional frame, in addition to what is claimed in the newly drafted independent claim 20 as a whole.

(G) Regarding the newly drafted claim 24, Gorbett et al. fails to anticipate that the wherein the end plate has a plurality of openings including a first fuel opening, a first oxidant opening, a first coolant opening, a second fuel opening, a second oxidant opening, and a second coolant opening which are aligned with the fuel inlet port, the oxidant inlet port, the coolant inlet port, the fuel outlet port, the oxidant outlet port, and the coolant outlet port respectively when the fuel-stack is placed thereon, and a rubber sealing ring attached on each surface of the sealing plate surrounding each the opening thereof, in addition to what is claimed in the newly drafted independent claim 20 as a whole.

(H) Regarding the newly drafted claim 26, Gorbett et al. fails to anticipate that the fuel is hydrogen and the oxidant is air or substantially pure oxygen, in addition to what is claimed in the newly drafted independent claim 20 as a whole.

Response to Rejection of Claims 11-13 and 17-19 under 35USC103

The Examiner rejected claims 11-13 and 17-19 as being unpatentable over Gorbett et al. in view of Wilkinson et al. (US 5,773,160). Pursuant to 35 U.S.C. 103:

“(a) A patent may not be obtained though the invention is **not identically** disclosed or described as set forth in **section 102 of this title**, if the **differences** between the subject matter sought to be patented and the prior art are such that the **subject matter as a whole would have been obvious** at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.”

In view of 35 U.S.C. 103(a), it is apparent that to be qualified as a prior art under 35USC103(a), the prior art must be cited under 35USC102(a)~(g) but the disclosure of the prior art and the invention are not identical and there are one or more differences between the subject matter sought to be patented and the prior art. In addition, such differences between the subject matter sought to be patented **as a whole** and the prior art are obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains.

In other words, the differences between the subject matter sought to be patent as a whole of the instant invention and Gorbell et al. which is qualified as prior art of the instant invention under 35USC102(b) are obvious in view of Wilkinson et al. at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains.

The applicant respectfully submits that the differences between the instant invention and Gorbell et al. are not obvious in view of Wilkinson et al. under 35USC103(a), due to the following reasons:

(I) Regarding the newly drafted claim 27-29, the examiner is of the view that it would have been obvious to one having ordinary skill in the art to use fittings with the manifold main passages of Gorbell et al. in order to produce the instant invention. The examiner, however, does not suggest any incentive for doing so. The applicant must point out that Gorbell et al. and Wilkinson et al. fails to anticipate or suggest that wherein a passage fitting is provided for each the main passage to facilitate an access thereof to peripheral equipment, in addition to what is claimed in the newly drafted claim 20 as a whole. In light of the newly drafted independent claim 20, the applicant respectfully submits that the differences between the instant invention and Gorbell et al. are substantial and non-obvious, in even in view of Wilkinson et al. In the instant invention, a supply and a discharge of the fuel, oxidant and coolant are spacedly provided on two ends of the non-porous body respectively so as to simplify the complexity of the resulting fluid flow network within the integral multi-stack system of fuel cell.

(J) Thus, this is clearly **not** a proper basis for combining references in making out an obviousness rejection of the present claims. Rather, the invention must

be considered as a whole and there must be something in the reference that suggests the combination or the modification. See Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick, 221 U.S.P.Q. 481, 488 (Fed. Cir. 1984) ("The claimed invention must be considered as a whole, and the question is whether there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination"), In re Gordon, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984), ("The mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification.") In re Laskowski, 10 U.S.P.Q.2d 1397, 1398 (Fed. Cir. 1989), ("Although the Commissioner suggests that [the structure in the primary prior art reference] could readily be modified to form the [claimed] structure, "[t]he mere fact that the prior art could be modified would not have made the modification obvious unless the prior art suggested the desirability of the modification.")

(K) In any case, even combining Gorbett et al. and Wilkinson et al. would not provide the invention as claimed -- a clear indicia of nonobviousness. Ex parte Schwartz, slip op. p.5 (BPA&I Appeal No. 92-2629 October 28, 1992), ("Even if we were to agree with the examiner that it would have been obvious to combine the reference teachings in the manner proposed, the resulting package still would not comprise zipper closure material that terminates short of the end of the one edge of the product containing area, as now claimed."). That is, modifying Gorbett et al. with Wilkinson et al., as proposed by the Examiner, would not provide the instant invention because the differences between the instant invention and Gorbett et al. are substantial in light of the newly drafted independent claim 20.

(L) The Court of Appeal of the Federal Circuit has stated, "[V]irtually all [inventions] are combinations of old elements." Environmental Designs, Ltd. V. Union Oil Co., 713 F.2d 693, 698, 218 USPQ 865, 870 (Fed. Cir. 1983); see also Richdel, Inc. v. Sunspool Corp., 714 F.2d 1573, 1579-80, 219 USPQ 8, 12 (Fed. Cir. 1983). Thus, "[o]ne cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention." In re Fine, 5 USPQ 2d 1600 (Fed. Cir. 1988). The obviousness cannot be shown by combining the teachings of the prior art unless there is some teaching or incentive supporting the combination. ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984); In re Geiger, 815 F.2d at 688, 2 USPQ2d at 1278 (Fed. Cir.

1987). The Federal Circuit in *In re Dembiczak*, 175 F.3rd 994, 50 USPQ2d 1614 (Fed. Cir. 1987) deprecated rejections based upon “a hindsight-based obviousness analysis” and emphasized that what is required is a “rigorous application of the requirement for a showing must be clear and particular” and that broad conclusory statements regarding the teaching of multiple references and “a mere discussion of the ways that the multiple prior art references can be combined to read on the claimed invention” is inadequate. Absent an explicit suggestion or teaching of the combination in the prior art references, there must be “specific...findings concerning the identification of the relevant art, the level of ordinary skill in the art, the nature of the problem to be solved, or any other factual findings that might serve to support a proper obviousness analysis”.

(M) Regarding the newly drafted claims 30-32, Gorbett et al. and Wilkinson et al. fail to anticipate or suggest that the main passages are through passages through the body of the manifold functional frame with one end thereof is sealed, in addition to what is claimed in the newly drafted independent claim 20 as a whole.

The applicant believes that for all of the foregoing reasons, all of the claims are in condition for allowance and such action is respectfully requested.

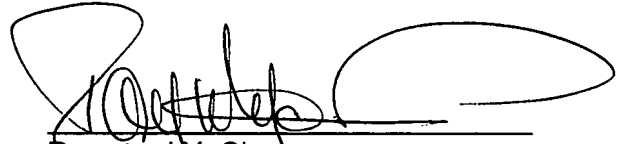
The Cited but Non-Applied References

The cited but not relied upon references have been studied and are greatly appreciated, but are deemed to be less relevant than the relied upon references.

In view of the above, it is submitted that the claims are in condition for allowance. Reconsideration and withdrawal of the rejection are requested. Allowance of claims 20-32 at an early date is solicited.

Should the examiner believes that anything further is needed in order to place the application in condition for allowance, he is requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,

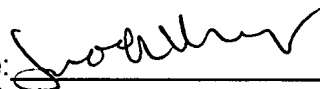


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